

REMARKS

Prior to entry of the instant amendment, claims 1-20 are pending in the subject application. By the instant amendment, claims 1, 2, 4, 5, 8, 10-12, 19 and 20 are amended, claims 3, 6 and 13-18 are cancelled, and claims 21 and 22 are added. Claim 4 is the sole independent claim.

Claims 1, 2, 4, 5, 7-12 and 19-22 are presented to the Examiner for further or initial consideration on the merits.

A. Introduction

In the outstanding Office action, the Examiner rejected claims 1-20 under 35 U.S.C. § 112, second paragraph; rejected claims 1-7 and 13-15 under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 4,566,125 to Clunn ("the Clunn reference") in view of U.S. Patent No. 6,295,120 to Miyatake ("the Miyatake reference"); rejected claims 8, 10, 12, 16, 18 and 20 under 35 U.S.C. § 103(a) as being unpatentable over the Clunn reference in view of the Miyatake reference and further in view of U.S. Patent No. 6,072,915 to Tanaka ("the Tanaka reference"); rejected claims 9 and 17 under 35 U.S.C. § 103(a) as being unpatentable over the Clunn reference in view of the Miyatake and Tanaka references and further in view of U.S. Patent No. 5,272,763 to Maruyama et al. ("the Maruyama et al. reference"); and rejected claims 11 and 19 under 35 U.S.C. § 103(a) as being unpatentable over the Clunn reference in view of the Miyatake reference and further in view of U.S. Patent No. 6,278,957 to Yasuda et al. ("the Yasuda et al. reference").

B. Claim Amendments

By the instant amendment, the claims have been broadened in some aspects. For example, claim 4 has been broadened in that the term "magnifying" is no longer recited in claim 4. Accordingly, the Examiner is expressly requested to re-visit any prior art references previously considered, as applicant no longer intends to be limited to the scope of the claims

as they were presented prior to entry of the instant amendment. In addition, applicant disavows any disclaimer of claim scope that may have arisen as a result of arguments previously advanced by the applicants in the instant application. *See Hakim v. Cannon Avent Group, PLC*, 479 F.3d 1313, 81 U.S.P.Q.2d 1900 (Fed. Cir. 2007).

By the instant amendment, the claims are amended such that independent claim 4 is the sole independent claim. Claim 1 is amended to depend from independent claim 4, and claims 6 and 13-18 are cancelled in view of the amendment to claim 1. Additionally, the subject matter of claim 3 is incorporated into claim 2, and claim 3 is cancelled. Further, claims 2, 5, 8, 10-12, 19 and 20 are also amended, and claims 21 and 22 are added.

C. Asserted Indefiniteness Rejections of Claims 1-20

In the outstanding Office action, the Examiner rejected claims 1-20 under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicants regard as the invention. Applicant respectfully traverses this rejection for at least the reasons set forth below.

In the outstanding Office action, the Examiner asserted,

Claims 1 and 4 claim, “magnifying an alignment mark region of the wafer” and “magnifying the identified key alignment mark.” This language is indefinite because it is unclear as to how the actual alignment mark is magnified. The examiner is interpreting the claim to have an image of the key alignment mark as magnified, however, appropriate correction is required.

(Office action mailed May 31, 2007, paragraph no. 6, page 3).

By the instant amendment, the recitations of “magnifying an alignment mark region of the wafer” and “magnifying the identified key alignment mark” have been removed from claims 1 and 4.

Applicant notes that claim 2 presently recites, *inter alia*, “recognizing a related alignment mark pattern in a second alignment mark region of the wafer at a first

magnification . . . wherein the captured image data corresponding to the first alignment mark region is captured at about four or more magnifications higher than the first magnification.”

Applicant respectfully submits that this language is clear and definite.

In the outstanding Office action, the Examiner also asserted that the language “at least about four magnifications” in claim 2 is indefinite.¹ By the instant amendment, claim 2 has been amended to recite, “about four or more times the first magnification.”

In view of the above, applicant respectfully submits that claims 1-20 are clear and definite, and respectfully requests that the rejection thereof under 35 U.S.C. § 112, second paragraph, be reconsidered and withdrawn.

D. Asserted Obviousness Rejection of Claims 1-7 and 13-15

In the outstanding Office action, the Examiner rejected claims 1-7 and 13-15 under 35 U.S.C. § 103(a) as being unpatentable over the Clunn reference in view of the Miyatake reference. This rejection is respectfully traversed for at least the reasons set forth below.

Independent claim 4 presently recites,

A method for recognizing a pattern of an alignment mark on a wafer, the method comprising:

- providing the wafer into a measurement apparatus;
- capturing image data corresponding to a first alignment mark region of the wafer;
- determining a shape of an alignment mark within the first alignment mark region;
- extracting an alignment mark pattern by a pattern recognition of the captured image data; and
- establishing the extracted alignment mark pattern as a reference mark,

wherein the pattern recognition is performed on a subset of the captured image data corresponding to the shape of the alignment mark.

¹ Office action mailed May 31, 2007, paragraph no. 6, page 3.

In the outstanding Office action, the Examiner asserted that the Clunn reference discloses, *inter alia*,

deleting image data from a region where the alignment pattern does not exist between the captured images by making a smaller search area (fig. 4, item 478), thus deleting the data that in the initial search (much like a fine position alignment search); and extracting an alignment mark pattern by a pattern recognition of the remaining image data after the deletion of the image data (col. 89 [*sic*, 8], line 58 - col. 9, line 32).

(Office action mailed May 31, 2007, paragraph no. 9, page 4).

Applicant respectfully disagrees with the Examiner's characterization of the Clunn reference. For example, contrary to the Examiner's assertion, the Clunn reference does not teach pattern recognition "of the remaining image data." Rather, the Clunn reference performs pattern recognition on an entire, unmodified image data set.

Moreover, even assuming, *arguendo*, that the Clunn reference teaches deleting data and performing pattern recognition on data remaining after the deletion, applicant respectfully submits that the Clunn reference fails to disclose, or even suggest, pattern recognition being performed "on a subset of the captured image data *corresponding to the shape of the alignment mark*," as presently recited in independent claim 4. Further, the Miyatake reference fails to provide the teachings missing from the Clunn reference. Accordingly, applicant respectfully submits that the proposed combination of the Clunn and Miyatake references fails to disclose or suggest each and every element of independent claim 4.

In view of the above, applicant respectfully submits that claim 4, as well as claims 2, 4, 5 and 7 depending therefrom, are allowable over the proposed combination of the Clunn and Miyatake references. Therefore, applicant respectfully requests that this rejection be reconsidered and withdrawn.

E. Asserted Obviousness Rejection of Claims 8, 10, 12, 16, 18 and 20

In the outstanding Office action, the Examiner rejected claims 8, 10, 12, 16, 18 and 20 under 35 U.S.C. § 103(a) as being unpatentable over the Clunn reference in view of the Miyatake reference and further in view of the Tanaka reference. This rejection is respectfully traversed for at least the reasons set forth below.

As noted above, claims 16 and 18 have been cancelled, and the rejection thereof is therefore moot. Further, applicant respectfully submits that the Tanaka reference fails to provide the teachings noted above as missing from the Clunn and Miyatake references. Accordingly, claims 8, 10, 12 and 20 are allowable for at least the reasons that claim 4, from which they depend, is allowable. Therefore, applicant respectfully requests that this rejection be reconsidered and withdrawn.

F. Asserted Obviousness Rejection of Claims 11 and 19

In the outstanding Office action, the Examiner rejected claims 11 and 19 under 35 U.S.C. § 103(a) as being unpatentable over the Clunn reference in view of the Miyatake reference and further in view of the Yasuda et al. reference. This rejection is respectfully traversed for at least the reasons set forth below.

Applicant respectfully submits that the Yasuda et al. reference fails to provide the teachings noted above as missing from the Clunn and Miyatake references. Accordingly, claims 11 and 19 are allowable for at least the reasons claim 4, from which they depend, is allowable. Therefore, applicant respectfully requests that this rejection be reconsidered and withdrawn.

G. Conclusion

The above remarks demonstrate the failings of the Examiner's arguments with respect to the outstanding rejections, and are sufficient to overcome them. However, while these remarks may refer to particular claim elements, they are not intended to, nor need they,

comprehensively address each and every reason for the patentability of the claimed subject matter over the applied art. Accordingly, applicant respectfully submits that the claims are allowable for reasons including, but not limited to, those set forth above, and patentability of the claims does not depend solely on the particular claim elements discussed above.

If the Examiner believes that additional discussions or information might advance the prosecution of the instant application, the Examiner is invited to contact the undersigned at the telephone number listed below to expedite resolution of any outstanding issues.

In view of the foregoing amendments and remarks, reconsideration of this application is earnestly solicited, and an early and favorable further action upon all the claims is hereby requested.

Respectfully submitted,

LEE & MORSE, P.C.

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PETITION and
DEPOSIT ACCOUNT CHARGE AUTHORIZATION

This document and any concurrently filed papers are believed to be timely. Should any extension of the term be required, applicant hereby petitions the Director for such extension and requests that any applicable petition fee be charged to Deposit Account No. 50-1645.

If fee payment is enclosed, this amount is believed to be correct. However, the Director is hereby authorized to charge any deficiency or credit any overpayment to Deposit Account No. 50-1645.

Any additional fee(s) necessary to effect the proper and timely filing of the accompanying-papers may also be charged to Deposit Account No. 50-1645.